

REMARKS

Claim 1 has been amended. Support can be found at FIGS. 3 and 4 of the Specification.

New claims 8 and 9 have been added and are somewhat similar to claim 1.

Claims 1-9 are pending and under consideration.

I. REJECTION OF CLAIMS 1, 5 AND 6 UNDER 35 U.S.C. § 103(a) AS BEING UNPATENTABLE OVER HSU ET AL. (US PATENT NO. 5,365,368; HEREINAFTER "HSU") IN VIEW OF DAVIES ET AL. (US PATENT NO. 6,751,414; HEREINAFTER "DAVIES"):

The present invention as recited in amended claim 1, for example, relates to an optical wavelength division multiplexed transmission system in a bi-directional optical wavelength division multiplexed transmission system for transmitting an upstream optical signal and a downstream optical signal along a same path within a same transmission line. The optical wavelength multiplexed transmission system comprises a first transmitting unit setting the upstream optical signal to a first band and transmitting the upstream optical signal set to the first band; and a second transmitting unit setting the downstream optical signal to a second band which is different from the first band and transmitting the downstream optical signal set to the second band. The optical wavelength multiplexed transmission system further comprises a distributed amplifier unit having a first pumping light source for pumping only the upstream optical signal set to the first band, and a second pumping light source for pumping only the downstream optical signal set to the second band. The first pumping light source amplifies the upstream optical signal set to the first band through backward pumping, and the second pumping light source amplifies the downstream optical signal set to the second band through backward pumping along the same path within the same transmission line.

Hsu discloses a bi-directional erbium doped fiber (EDF) optical fiber amplifier. The amplifier includes first and second separate uni-directional EDF amplifier channels for two respective counter-propagation signals at respective first and second different wavelengths. The amplifier further comprises wavelength selective means for maintaining separation between the signals of different wavelengths so that only signals of the first wavelength traverse the first amplifier channel and only signals of the second wavelength traverse the second amplifier channel. The wavelength selective means includes first and second signal routing WDM optical couplers for separating the signals into signal components at the first and second wavelengths. The first coupler is coupled to the first ends of the EDFs and the second coupler is coupled to the

second ends of the EDFs (see column 2, lines 46-68).

At page 2 of the Office Action, the Examiner asserts that Hsu teaches all of the features of the claimed invention, except “transmitting a first band and a second band of optical signals”. The Examiner asserts that Davies teaches the “transmission and amplification of band of optical signals”.

Davies discloses a method of assigning “a band of optical channels” (see column 9, lines 63-67). However, Davies fails to make up for the deficiencies of Hsu.

The Applicant respectfully submits that neither Hsu nor Davies, individually or combined, teach or suggest “wherein said first pumping light source amplifies the upstream optical signal set to the first band through backward pumping, and said second pumping light source amplifies the downstream optical signal set to the second band through backward pumping along the same path within the same transmission line,” as recited in amended claim 1.

Thus, claims 1, 5 and 6 patentably distinguish over Hsu in view of Davies. Therefore, it is respectfully submitted that the rejection is overcome.

II. REJECTION OF CLAIM 2 UNDER 35 U.S.C. § 103(a) AS BEING UNPATENTABLE OVER HSU IN VIEW OF DAVIES AND FURTHER IN VIEW OF MOLLENAUER ET AL. (US PATENT NO. 4,699,452; HEREINAFTER “MOLLENAUER”):

At page 3 of the Office Action, the Examiner admits that neither Hsu nor Davies disclose “the amplifier unit performing Raman amplification”. However, the Examiner asserts that Mollenauer discloses this deficiency.

Mollenauer discloses an optical fiber communication system with Raman Amplification (see Abstract and column 4, lines 18-20).

However, neither of the foregoing references relied upon, individually or combined, teach or suggest all of the features recited in amended claim 1 from which claim 2 depends, as mentioned above. Therefore, the combination of Hsu, Davies and Mollenauer fails to establish a prima facie case of obviousness over the claimed invention.

Thus, claim 2 patentably distinguish over Hsu in view of Davies and further in view of Mollenauer.

Therefore, it is respectfully submitted that the rejection is overcome.

III. REJECTION OF CLAIM 4 UNDER 35 U.S.C. § 103(a) AS BEING UNPATENTABLE OVER HSU IN VIEW OF DAVIES AND IN FURTHER VIEW OF KINOSHITA (US PATENT NO. 6,342,965):

At page 4 of the Office Action, the Examiner admits that neither Hsu nor Davies disclose “the first and second pumping light includes a plurality of light sources of different wavelengths. However, the Examiner asserts that Kinoshita makes up for the deficiencies of Hsu and Davies.

Kinoshita discloses a pair of polarization multiplexing pump sources connected to two optical demultiplexer-multiplexers, respectively (see FIG. 49 and column 56, lines 13-16).

However, neither of the foregoing references relied upon, individually or combined, teach or suggest all of the features recited in amended claim 1 from which claim 4 depends, as mentioned above. Therefore, the combination of Hsu, Davies and Kinoshita fails to establish a prima facie case of obviousness over the claimed invention.

Thus, claim 4 patentably distinguish over Hsu in view of Davies and further in view of Kinoshita.

Therefore, it is respectfully submitted that the rejection is overcome.

IV. REJECTION OF CLAIM 7 UNDER 35 U.S.C. § 103(a) AS BEING UNPATENTABLE OVER HSU IN VIEW OF DAVIES AND IN FURTHER VIEW OF YANG (US PATENT NO. 6,130,775):

At page 4 of the Office Action, the Examiner admits that neither Hsu nor Davies disclose “a circulator unit located at one or both ends of the amplifier unit”. However, the Examiner asserts that Yang makes up for the deficiencies of Hsu and Davies.

Yang discloses at FIG. 2, an optical amplifier having a first and second optical circulators. The first optical circulator for transmitting a first signal light from a first transmitter to a fiber amplifier and for transmitting the second signal light from the fiber amplifier to the second receiver and the second optical circulator for transmitting the first signal light from the fiber amplifier to the first receiver and for transmitting the second signal light from the second transmitter to the fiber amplifier (see Abstract, and column 2, lines 30-67).

However, neither of the foregoing references relied upon, individually or combined, teach or suggest all of the features recited in amended claim 1 from which claim 7 depends, as mentioned above. Therefore, the combination of Hsu, Davies and Yang fails to establish a prima facie case of obviousness over the claimed invention.

Thus, claim 7 patentably distinguish over Hsu in view of Davies and further in view of Yang.

Therefore, it is respectfully submitted that the rejection is overcome.

VI. CONCLUSION:

In view of the foregoing amendments and remarks, it is respectfully submitted that each of the claims patentably distinguishes over the prior art, and therefore, defines allowable subject matter. A prompt and favorable reconsideration of the rejection along with an indication of allowability of all pending claims are therefore respectfully requested.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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